IN THE CLAIMS

Please amend the claims as follows:

1. (Original) An equalization system comprising:

a first equalizer to process a communication signal received from a communication channel to generate an output;

a reduced alphabet determination unit to identify a reduced alphabet based on said output of said first equalizer; and

a reduced alphabet MLSE equalizer to detect data in said communication signal received from said communication channel based on said reduced alphabet identified by said reduced alphabet determination unit.

2. (Original) The equalization system of claim 1, wherein:

said first equalizer has a length that is less than an anticipated memory length of said communication channel.

3. (Original) The equalization system of claim 1, wherein:

said first equalizer includes a reduced length MLSE equalizer.

4. (Original) The equalization system of claim 1, wherein:

said first equalizer includes a delayed decision feedback sequence estimation (DDFSE) equalizer.

5. (Original) The equalization system of claim 1, wherein:

said first equalizer includes a linear equalizer.

6. (Original) The equalization system of claim 1, wherein:

said first equalizer includes an M-Algorithm equalizer.

7. (Original) The equalization system of claim 1, wherein:

said first equalizer includes an SA(B,C) detector.

8. (Original) The equalization system of claim 1, wherein:

said reduced alphabet MLSE equalizer is a full-state MLSE equalizer.

9. (Original) The equalization system of claim 1, wherein:

said output of said first equalizer includes a plurality of soft symbols each having a corresponding probability, wherein said reduced alphabet determination unit selects the K highest probability soft symbols from said output as said reduced alphabet, where K is a positive integer.

10. (Original) The equalization system of claim 1, wherein:

said output of said first equalizer includes a single symbol, wherein said reduced alphabet determination unit selects K-1 symbols from a full alphabet that are closest in distance to said single symbol as said reduced alphabet, where K is a positive integer greater than 1.

11. (Original) The equalization system of claim 1, wherein:

said reduced alphabet determination unit identifies a reduced alphabet having K symbols, where K is a positive integer, said equalization system further comprising an alphabet length determination unit for determining a value for K based on an output of said first equalizer.

12. (Original) The equalization system of claim 11, wherein:

said alphabet length determination unit determines a value for K on an input symbol by input symbol basis.

13. (Original) The equalization system of claim 11, wherein:

said alphabet length determination unit determines a value for K based on a probability associated with a highest probability soft symbol output by said first equalizer for a particular input symbol.

14. (Original) The equalization system of claim 11, wherein:

said alphabet length determination unit determines a value for K so that a cumulative probability of the K highest probability soft symbols output by said first equalizer exceeds a threshold value.

15. (Original) A method for performing equalization within a communication

system, comprising:

first processing a communication signal using a first equalizer;

determining a reduced alphabet based on a result of said first processing; and

second processing said communication signal using a reduced alphabet MLSE equalizer, said reduced alphabet MLSE equalizer operating on said communication signal based on said reduced alphabet.

16. (Original) The method of claim 15, wherein:

said first equalizer includes a reduced state MLSE equalizer.

17. (Original) The method of claim 15, wherein:

first processing includes generating a plurality of soft symbols having associated probabilities.

18. (Original) The method of claim 17, wherein:

determining a reduced alphabet includes selecting the K highest probability soft symbols from said plurality of soft symbols as the reduced alphabet, where K is a positive integer.

19. (Original) The method of claim 15, wherein:

first processing includes generating a hard symbol and determining includes selecting the K-1 symbols within a full alphabet that are closest in distance to said hard symbol, where K is a positive integer greater than 1.

20. (Original) The method of claim 15, wherein:

determining a reduced alphabet includes determining an alphabet of size K, where K is a positive integer, said method further comprising redetermining K for successive input symbols within said communication signal.

21. (Original) The method of claim 15, wherein:

second processing includes processing said communication signal in a full-state, reduced alphabet MLSE equalizer.

22. (Original) A computer readable medium having program instructions stored

thereon for implementing, when executed within a digital processing device, a method for performing equalization within a communication system, said method comprising:

first processing a communication signal using a first equalizer;

determining a reduced alphabet based on a result of said first processing; and

second processing said communication signal using a reduced alphabet MLSE equalizer, said reduced alphabet MLSE equalizer operating on said communication signal based on said reduced alphabet.

23. (Original) The computer readable medium of claim 22, wherein:

determining a reduced alphabet includes determining a reduced alphabet for each input symbol within said communication signal.

24. (Original) The computer readable medium of claim 22, wherein:

determining a reduced alphabet includes determining a reduced alphabet having a size that is related to a symbol probability determined during first processing.

25. (Original) An equalization system comprising:

a reduced state, full-alphabet MLSE equalizer to process a communication signal received from a communication channel to generate a plurality of soft symbols for a first input symbol within said communication signal, said plurality of soft symbols having corresponding symbol probabilities;

a symbol selection unit to select symbols from said plurality of soft symbols to form a reduced alphabet for said first input symbol; and

a full-state, reduced alphabet MLSE equalizer to process said communication signal based on said reduced alphabet.

26. (Original) The equalization system claimed in claim 25, wherein:

said symbol selection unit selects, for said first input symbol, the K highest probability soft symbols output by said reduced state, full-alphabet MLSE equalizer to form said reduced alphabet, where K is an integer greater than 1.

27. (Original) The equalization system claimed in claim 26, comprising:

an alphabet size determination unit to determine a value for K for each input symbol within said communication signal based on symbol probabilities output by said reduced state, full-alphabet MLSE equalizer.

28. (Original) A communication device, comprising:

means for receiving a communication signal from a communication channel, said communication signal including undetected input symbols selected from a full symbol alphabet;

means for determining, for individual input symbols within said communication signal, a reduced symbol alphabet having symbols that are more likely to be an actual transmitted symbol than other symbols within said full symbol alphabet; and

a full-state MLSE equalizer for processing said communication signal based on said reduced symbol alphabet.

29. (Original) The communication device of claim 28, wherein:

said means for determining includes means for dynamically adjusting a size of said reduced symbol alphabet for successive input symbols within said communication signal.

30. (Original) The communication device of claim 28, wherein:

said means for determining includes a reduced complexity equalizer.

31. (New) The equalization system of claim 1, wherein:

the first equalizer generates the output having a subset of symbols with a greater probability of being an actually transmitted as determined from the communication signal; and

the alphabet determination unit generates the reduced alphabet further based on the subset of the symbols provided by the first equalizer.

32. (New) The method of claim 15, wherein:

the first processing including processing the communication signal by the first equalizer to produce a subset of symbols with a greater probability of being an

actually transmitted; and

the determining including producing the reduced alphabet based on the subset of the symbols provided by the first equalizer.

33. (New) The computer readable medium of claim 22, wherein:

the first processing including processing the communication signal by the first equalizer to produce a subset of symbols with a greater probability of being an actually transmitted; and

the determining including producing the reduced alphabet based on the subset of the symbols provided by the first equalizer.